

## **Monitoring and analysis of sediment transport in the Elwha River**

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The U.S. Department of Interior is planning to remove two dams from the Elwha River on the Olympic Peninsula. Dam removal will restore the natural flow of fine and coarse-grained sediments from the headwaters of the river to the Strait of Juan de Fuca, but it will also result in the erosion of sediments stored in the reservoirs formed by the dam. The timing and volume of increased sediment transport are important to anticipate for planning and implementing management responses. The U.S. Geological Survey is monitoring fluvial sediment transport in the Elwha River by adapting two technologies to the measurement of suspended sediment in the river environment. Laser diffraction has proved to be a successful method for monitoring suspended sediment concentrations (SSC) and particle-size distributions in marine systems, but is limited to SSC on the order of 1 g/L. Laser diffraction has been combined with a dilution system to provide an analytic range beyond the highest SSC that are expected to occur during dam removal. To compliment the point measure of SSC provided by laser diffraction instrument, an acoustic Doppler current profiler provides an integrated measure of SSC across the river channel. In concert, these instruments will provide valuable information about the sediment transport during dam removal and post-dam recovery of the Elwha River.